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Studies on the Oribatid fauna of Kenya (Acari: Oribatida) I.

By

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ABSTRACT. Oribatid species sampled from the soils of Kenya have been studied. From a total of 10 identified species 9 are described as new to science. New genera are also erected. Three known species are redescribed and figured. One homonym (Austracarus) and one synonym (Sphaerochochthonius) are established.

KEY WORDS. Acari, Oribatida, taxonomy, Africa.

The northernmost limit of the Ethiopian Region appears to be questionable on the basis of my recent soil zoological investigations (MAHUNKA, 1982). At present I even consider the territory of Ethiopia proper to be a transitional zone between the Palaearctic and the Ethiopian Regions, so much so that a strong effect of the former region is more than strongly evident (MAHUNKA, 1984). This is why a better knowledge of the fauna south of Ethiopia is more than desirable.

Among these regions the country of Kenya seemed to me highly important. Let alone my publication of this country based on the materials collected by Dr. V. AELLEN and Dr. P. STRINATI (MAHUNKA, 1977), almost nothing is known of its oribatid fauna. It is NIEDBAŁA's (1982) paper which contains some references concerning Kenya.

In order to better know the fauna prevailing there, by the kind help of Dr. B. HAUSER (Museum D'Histoire Naturelle, Geneva), my wife and I had the opportunity to fly to Kenya in late summer of 1985 (MAHUNKA and MAHUNKA-PAPP, 1986), where we collected and extracted many soil samples in various parts of the country. In spite of the severe drought at that time, the collected material appears to be highly diverse and very rich. Since the publication capacities of various journals are rather limited, I am forced to publish my results in parts.

In this paper I propose to discuss 10 species, of which 9 are new to science. Of the known species, herewith I present the supplementary description, redescription and figures of one species. The type material is deposited in the Hungarian Natural History Museum (HNHM), in the Museum D'Histoire Naturelle, Geneva (MHNG) and in the Natural History Museum, Nairobi (NHMN).

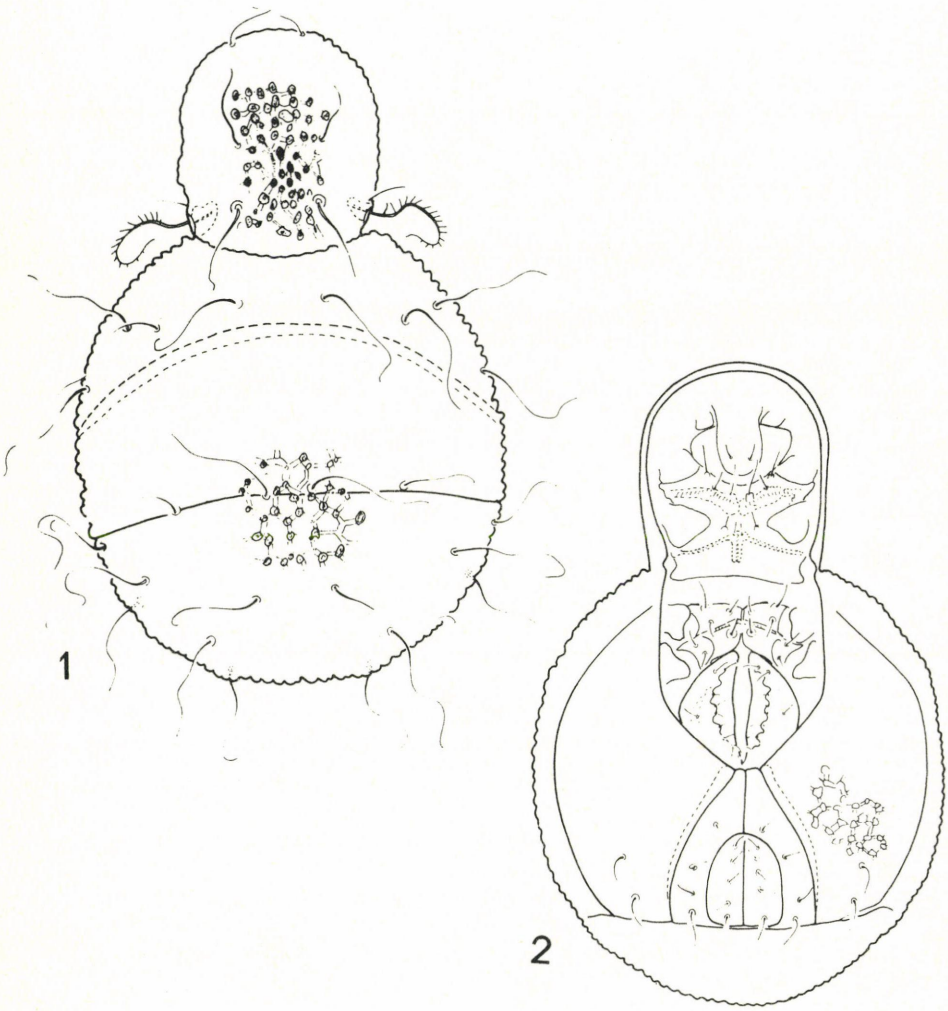
TAXONOMICAL AND ZOOGEOGRAPHICAL COMMENTS

Several taxa deserve special mention, mostly from systematic or zoogeographic points of view. Thus, for example, Papillocepheus Balogh et Mahunka, 1966, so far known from South Africa, has its second species from Kenya, also the genus Hauseroplophora Mahunka, 1977 has its second representative that is quite close to the type-species from Kenya.

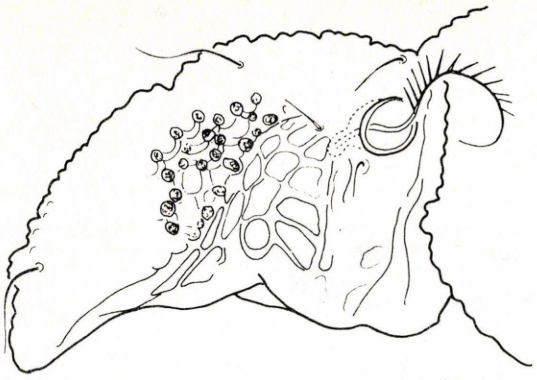
In the following I wish to make some corrections concerning the fauna of the Ethiopian Region.

1. Ululohmannia nom. nov. for Austracarus Mahunka, 1984 nec Austracarus P. et J. Balogh, 1983. The homonymy occurred through an overlapping period of time concerning the preparation of one, and the publication of the other paper.

2. Similochthonius Mahunka, 1985 (July 1985) = Sphaerochochthonius Mahunka, 1985 (October 1985) syn. nov. The synonymy occurred through my mistake, since one of my papers had for some time been unpublished, then it suddenly was printed. Furthermore, in the diagnosis of the genus Similochthonius and in the description of the species S. decoratus there are some perplexing parts, so much so that I forgot to mention the 6th prodorsal seta pair. For this reason, as valid description we should accept that of the diagnosis of Sphaerochochthonius. Although the Indian and the South African species are closely related, they may readily be separated. They are separable on the basis of the dimensions of the prodorsal setae (much larger than in S. australis), furthermore by the shape (phylliform in australis, simple in decoratus) of the adanal setae.



Figs 1-2. Hauseroplophora flagellata sp. n. (1= dorsal side, 2= ventral side)



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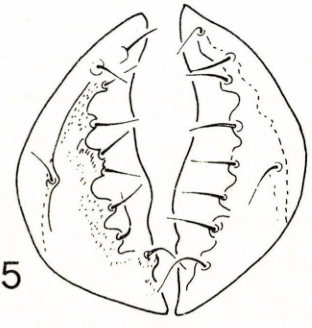

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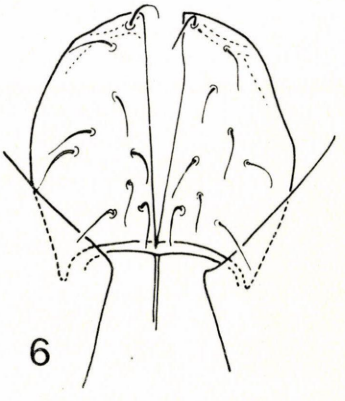

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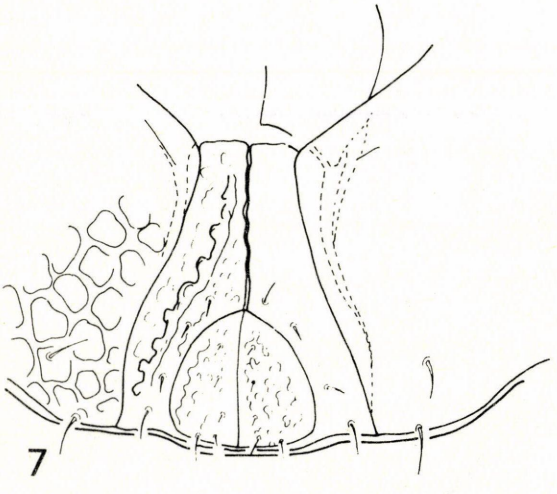

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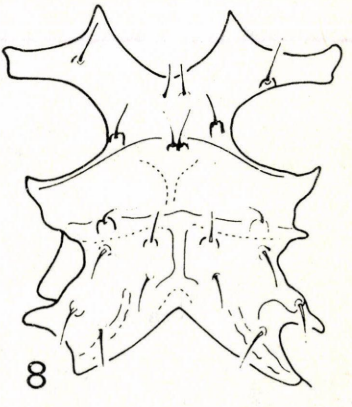

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Figs 3-5. Hauseroplophora flagellata sp. n. (3= prodorsum in lateral view, 4= sculpture of notogaster, 5= genital plates)

Figs 6-8. Hauseroplophora soniae Mahunka, 1977 (6= genital plates, 7= ano-adanal region, 8= epimeral region)

LIST OF LOCALITIES

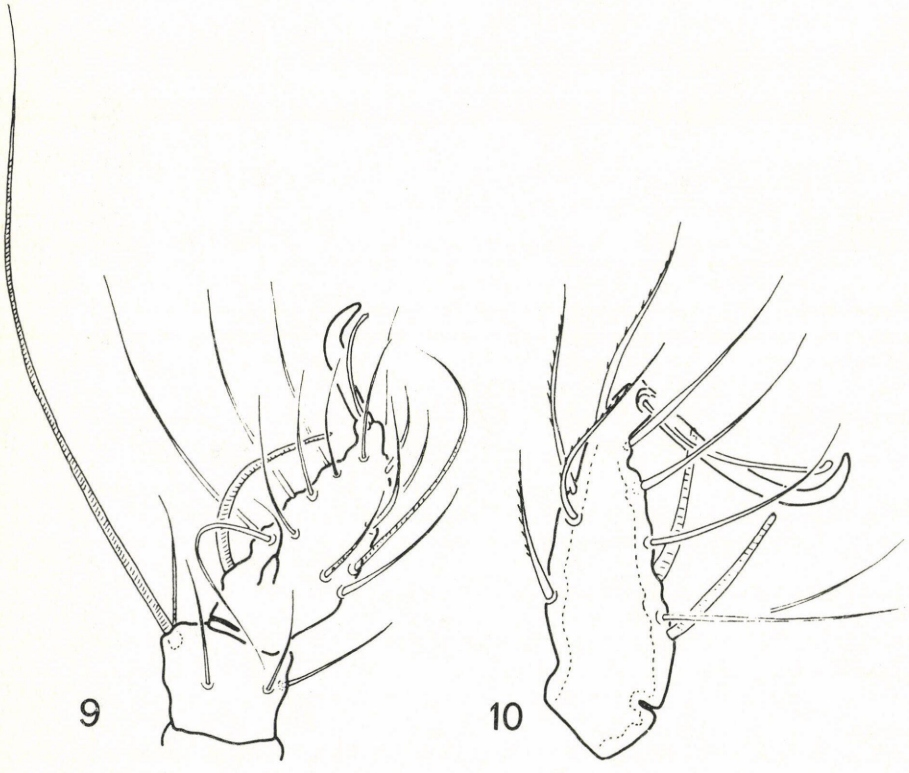
No. 1. Ukunda, seashore, 16.IX.1985. - Berlese-, Nematoda- and Tardigrada-samples from decaying debris and litter, accumulated at base of baobab trees. Sandy soil.
No.74. Tsavo National Park, Ngulia Lodge. 28.IX.1985. - Sifted material from litter and dry decaying stumps.

DESCRIPTIONS OF SPECIES

Hauserophlophora flagellata sp.n.

Measurements. - Length: 282 µm, width: 180 µm.

Prodorsum: Surface ornamented by polygonal sculpture, medially with large tubercles at ramification points (Fig. 4). Lateral part of prodorsum only simply polygonate beside exobothridial setae (Fig. 3). Between the interlamellar setae a stronger chitinization resembling a narrow wedge, observable. All prodorsal setae thin, simple, setiform, exobothridial ones short, all others long and flagellate. Sensillus also long, curved, with long cilia.



Figs 9-10. Hauseroplophora soniae Mahunka, 1977 (9= leg I, 10= leg II)

Notogaster: Sculpture similar to that of prodorsal surface, tubercles strongly projecting from the outline of body. All setae long, thin, flagellate (Fig. 1), setae d_1-d_2 not visible.

Coxisternal region: Strongly chitinized. Epimeral setae arising mostly from tubercles (Fig. 2). Epimeral setal formula: 3-2-3-3.

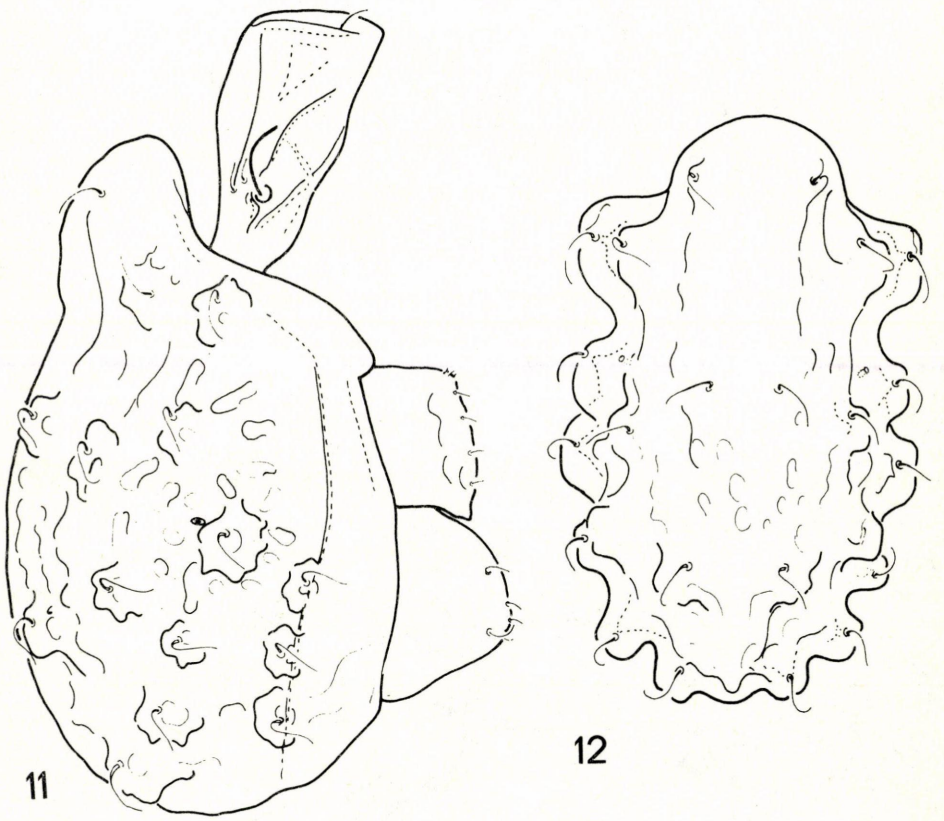
Anogenital region: Genital setae arising on tubercles, resembling papillae (Fig. 5). Anogenital setal formula: 9-0-5-4. Anal and adanal plates also with polygonate ornamentation.

Palpus: Tarsus without long, taeniform setae.

Legs: All legs tridactylous, lateral claws very thin, their end not dilate.

Material examined: Holotype (1172-HO-86): No. 74, deposited in the HNHM.

Remarks: The new species is the third known species of Hauserophlophora Mahunka, 1977. It is distinguished from the other two species by the long flagelliform setae and the large tubercles on the body surface.



Figs 11-12. Hoplophorella verrucosa sp. n. (11= lateral view, 12= notogaster in dorsal view)

Hauseroplophora soniae Mahunka, 1977

This genus is very important in the system of primitive Oribatids. The original description lacks some significant characters. On the basis of the newly collected specimens I give now some of these significant features.

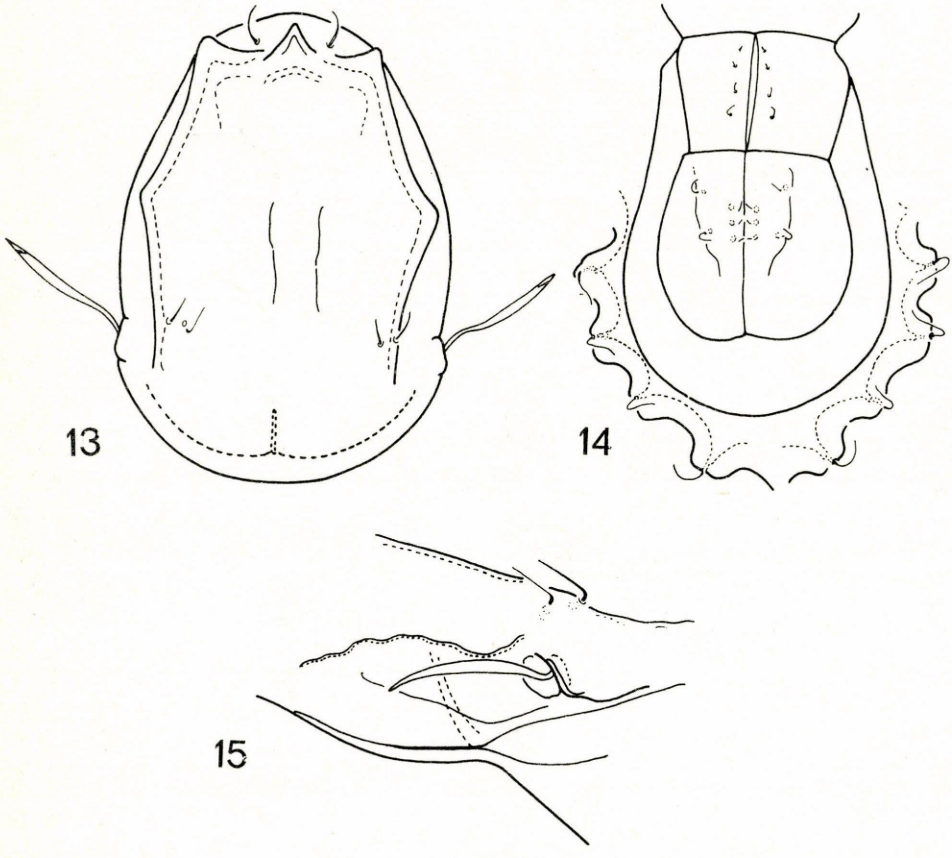
Palpus: On tarsus three dilate, taeniform setae present, as in Cryptoplophora abscondita Grandjean, 1932.

Coxisternal region: (Fig. 8) Epimeral setal formula: 3-1-3-3. All epimeral setae inserted on larger or smaller tubercles, among them tubercles of setae 3b being the largest.

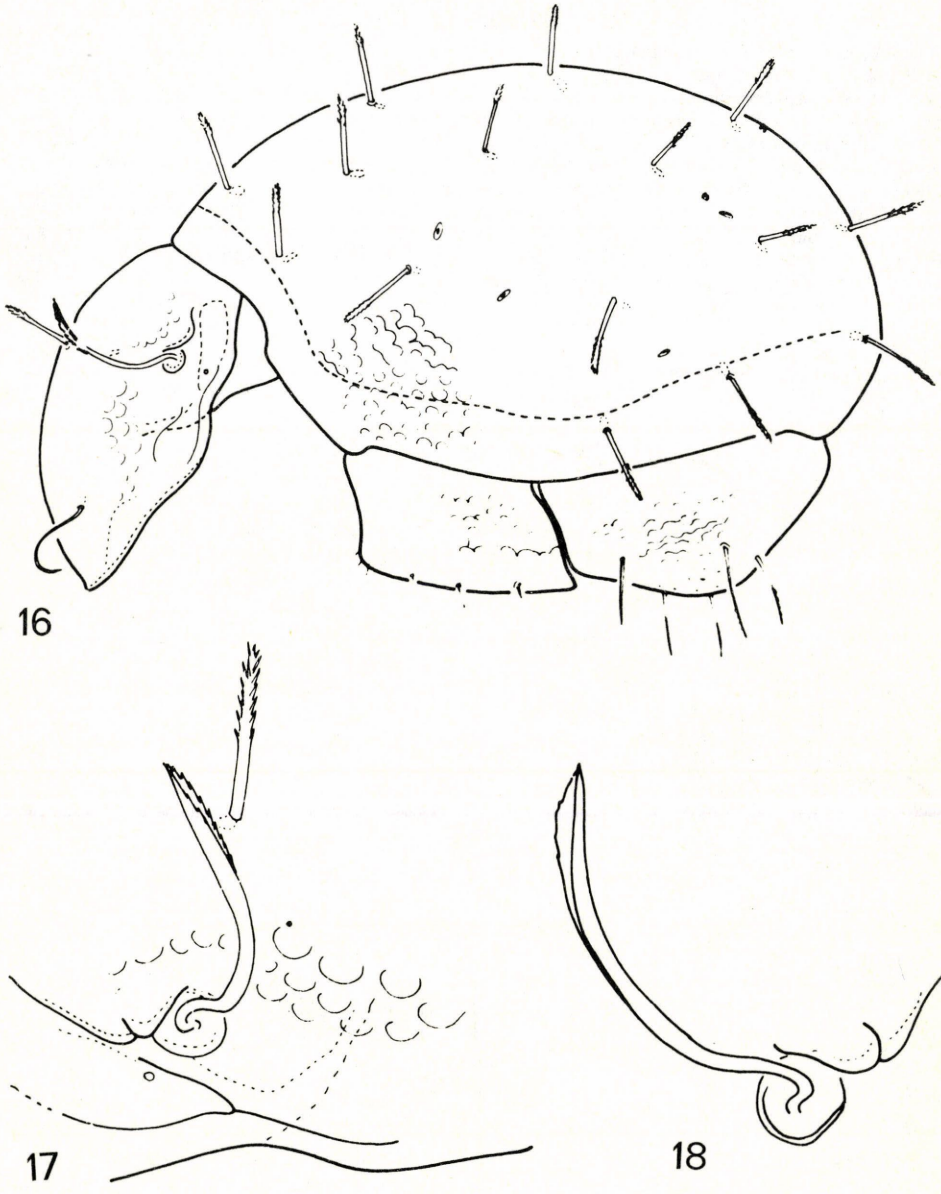
Anogenital region: Five pairs of short, spiniform anal and four pairs of adanal setae present (Fig. 7). Both pairs of plates well ornamented, a stronger longitudinal costula present on the adanal plates.

Legs: Solenidium ωp of tarsus 1 very long, longer than half length of tarsus (Fig. 9). ε dilate basally. Both solenidium of leg 2 (Fig. 10) also long, curved. All lateral claws slightly dilated distally.

Locality: No. 74: 1 specimen.



Figs 13-15. Hoplophorella verrucosa sp. n. (13= aspis in dorsal view, 14= anogenital region, 15= lateral part of aspis)



Figs 16-18. Hoplophthiracarus anosculpturatus sp.n. (16= lateral view, 17= lateral part of aspis, 18= sensillus)

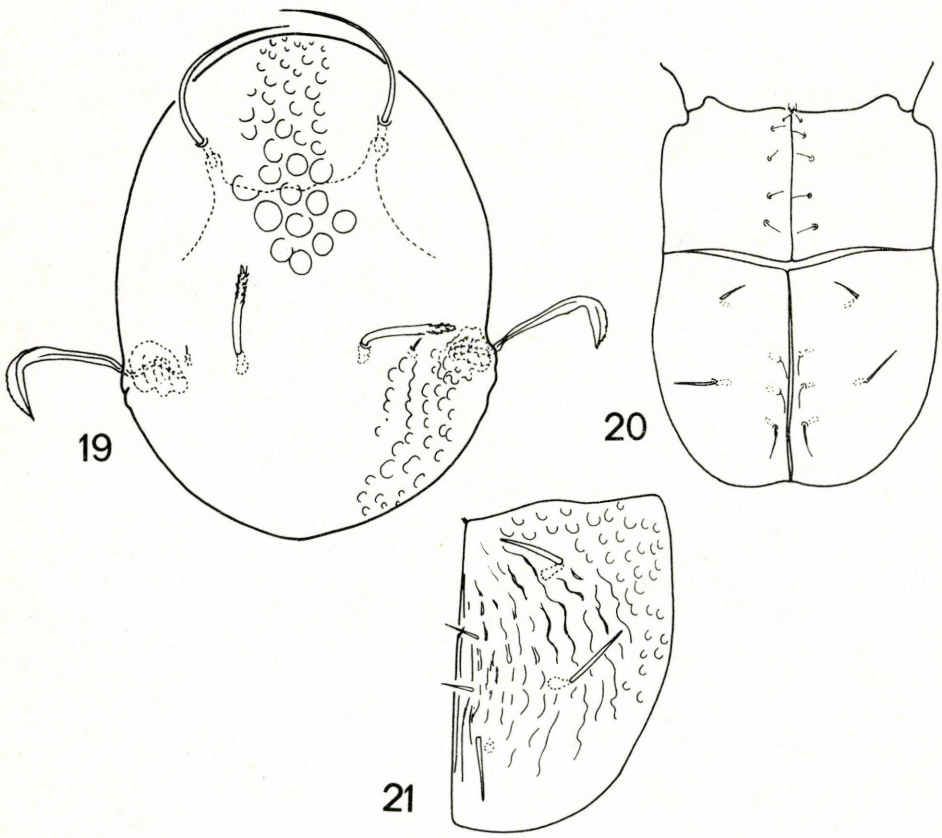
Hoplophorella verrucosa sp. n.

Measurements. - Length of aspis 295-312 µm, length of notogaster: 688-730 µm, height of notogaster: 377-419 µm.

Aspis: Quadrangular anteriorly in lateral view, its rostral margin also wide, with three swellings (Fig. 13) representing crests, being well visible in lateral view (Fig. 15). Three pairs of prodorsal setae (ro, le, in) simple, nearly equal in length, setae ex reduced, only their insertion points visible. Sensillus slightly fusiform (Fig. 15), smooth. A weak, irregular lateral crest present, but not reaching lateral margin.

Notogaster: Anterior part large, protruding forward, in dorsal view it converges toeards basal part of aspis. In lateral view this part narrowed anteriorly. Surface of notogaster with large protuberances, ribs and alveoli or hollows, 15 pairs of short, simple, but curved notogastral setae arising on protuberances. Cuticle always thin at insertions of the setae (Fig. 12).

Anogenital region: Genito-aggenital and ano-adanal plates well projecting beyond outline of the body. Surface of plates ornamented by crests or alveoli. Setae ad_2 and ad_3 equal in length and originating equally far from inner margin of the plates (Fig. 14).



Figs 19-21. Hoplophthiracarus anosculpturatus sp. n. (19= aspis in dorsal view, 20= anogenital region, 21= anal plate)

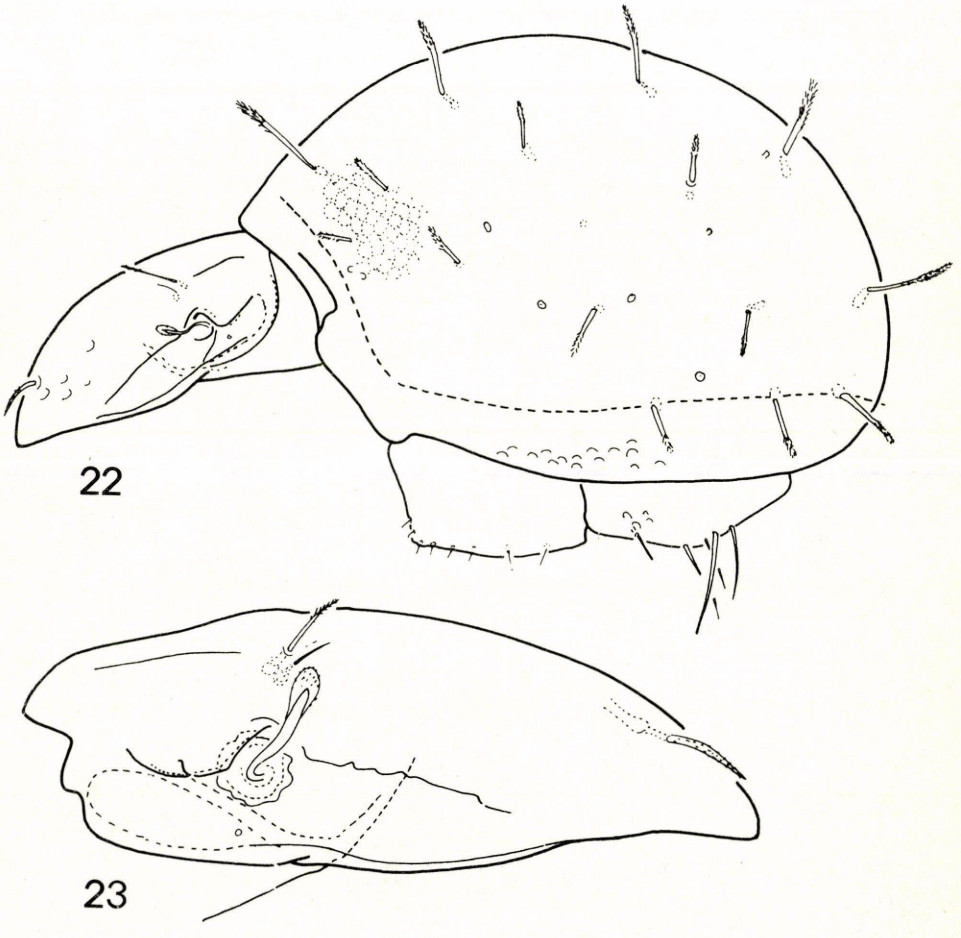
Material examined: Holotype: (1173-HO-86): No. 1; one paratype: from the same sample. Holotype deposited in the HNHM, paratype (1173-PO-86) in MHNG.

Remarks. The new species is well characterized by the form of its notogaster. It belongs to the multituberculatus species group, standings nearest to H. horrida Mahunka, 1984. However, it is distinguished from the latter by the lack of the polygonal reticulation on the posterior part of the notogaster, by the shape of sensillus (much thinner and longer in horrida) and by the anterior part of notogaster (much wider in horrida).

Hoplophthiracarus anosculpturatus sp. n.

Measurements. - Length of aspis: 152-184 µm, length of notogaster: 268-364 µm, height of notogaster: 156-216 µm.

Aspis (Fig. 19): Outline in lateral view evenly convex. Median crest and lateral carina absent. Marginal line very short, disappearing at the basal half of the aspis (Fig. 16). Surface - with the exception of a wide field in front of bothridium - foveolate, foveolae gradually



Figs 22-23. Hoplophthiracarus hamidi sp. n. (22= lateral view, 23= aspis in lateral view)

increasing in size to wards the median region. Sensillus (Fig. 18) long, with lanceolate head. Rostral setae long, setiform and smooth, overlapping medially. Interlamellar setae bacilliform, erect, their distal half spinose, lamellar setae minute, very thin, hardly observable. Exobothridial setae represented only by their alveoli. Bothridial squama waved.

Notogaster: 15 pairs of bacilliform, notogastral setae similar to interlamellar ones present, reduced setae f_1 and f_2 visible. Four pairs of elongate lyrifissures also observable. Surface densely foveolate, foveolae partly connected with each other (Fig. 16).

Anogenital region (Fig. 20): Genital setae gradually shortened anteriorly. Surface of genital plates similar to that of notogastral one, but on ano-adanal plates foveolae gradually passing into slits and furrows (Fig. 21). Both pairs of anal setae and setal ad_1 arising in a longitudinal line, near to the inner margins of plates: setae ad_2 far from these. Setae ad_1 and ad_2 nearly equal in length.

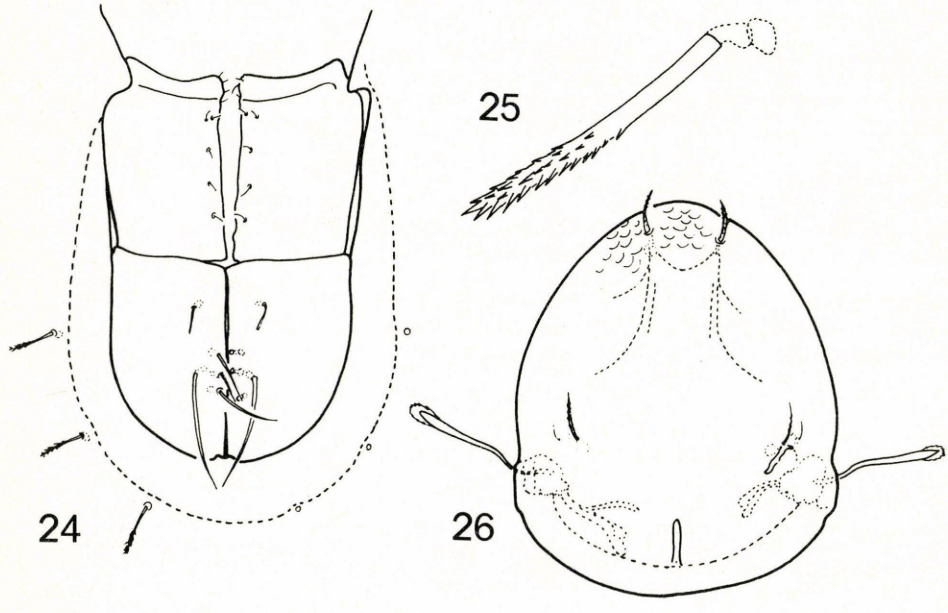
Material examined: Holotype (1174-HO-86): No. 74; five paratypes: from the same sample. Holotype and three paratypes (1174-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.

Remarks: The new species is well characterized by the shape of the prodorsal setae and the sculpture of the ano-adanal plates. This combination of features and any similar sculpture have so far been unknown in the related Hoplophthiracarus species.

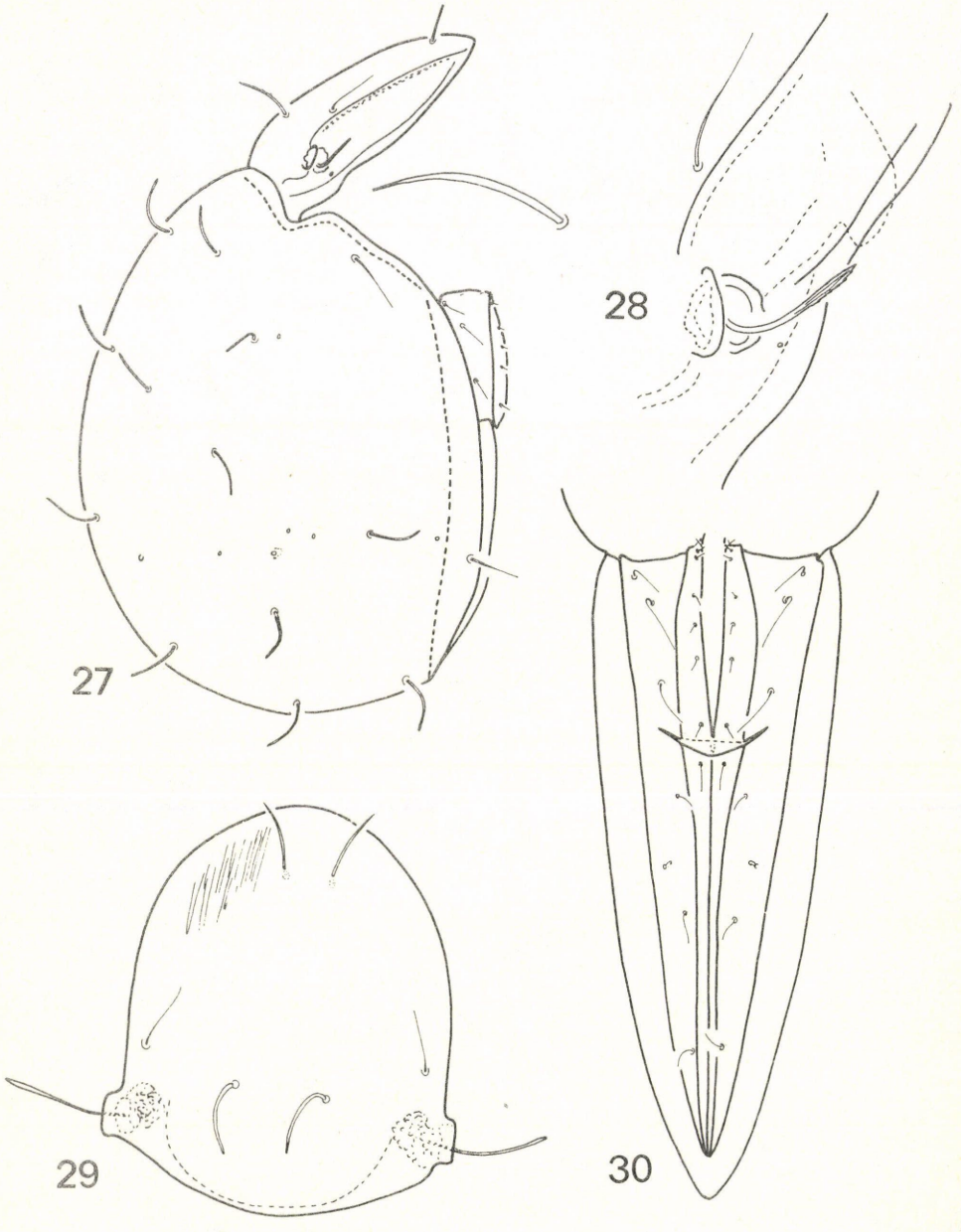
Hoplophophthiracarus hamidi sp. n.

Measurements. - Length of aspis: 246-369 µm, length of notogaster: 475-762 µm, height of notogaster: 287-469 µm.

Aspis: Low in lateral view, its lateral margin gradually disappearing anteriorly. A clearly visible, but thin and not straight lateral carina also present, it begins at the dorsal margin of the bothridium (Fig. 23). Surface with some weak alveoli anteriorly and with weak rugae basally. Rostral setae thick, barbed, interlamellar setae slightly longer but thinner,



Figs 24-26. Hoplophthiracarus hamidi sp. n. (24= anogenital region, 25= seta d_1, 26= aspis in dorsal view)



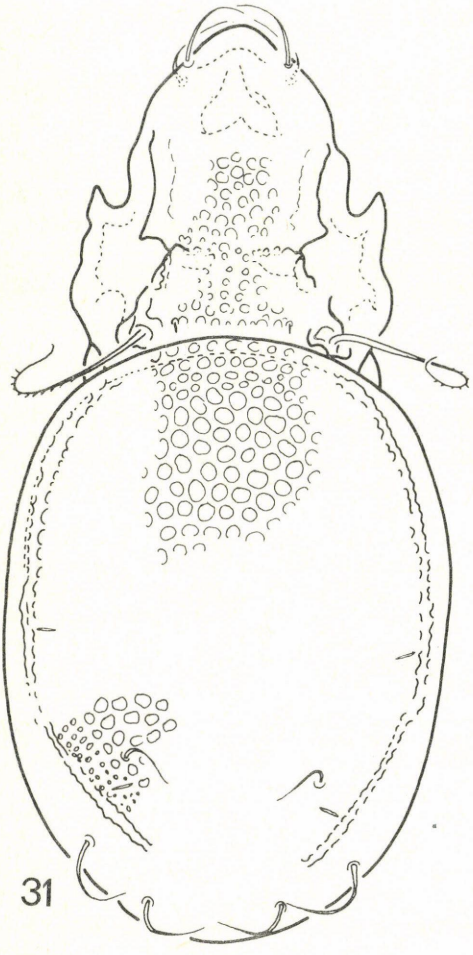
Figs 27-30. Oribotritia tiwi sp. n. (27= lateral view, 28= lateral part of aspis, 29= aspis in dorsal view, 30= anogenital region)

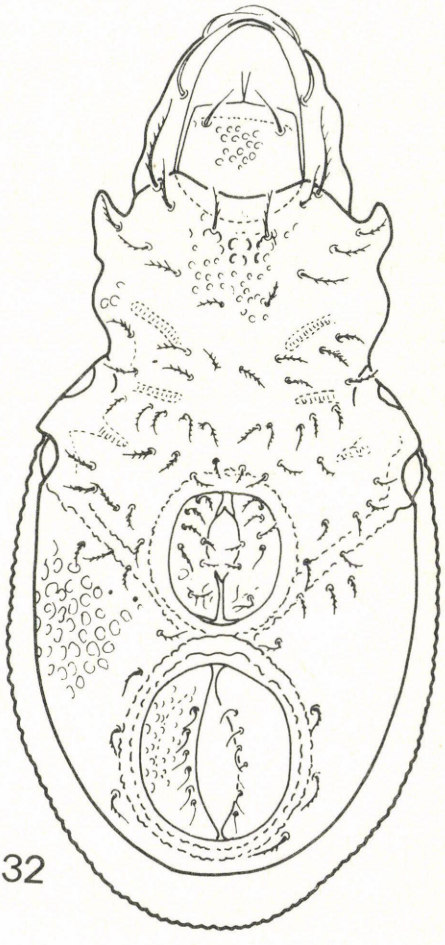
two-three times longer than exobothridial setae, erect but directed forwards. Sensillus long, its peduncle slightly fusiform, with a round and spiculate head.

Notogaster: All notogastral setae erect, bacilliform, their distal end spinose well spiculate (Fig. 25). Notogastral surface ornamented by weak, hardly discernible foveolae (Fig. 22).

Anogenital region (Fig. 24): Like the notogastral surface. Genital and anal plates also ornamented by foveolae. Ano-adanal setae different in lengths, ad_2 the longest, ad_3 the shortest. Setae an_1 much shorter than an_2.

Material examined: Holotype (1175-HO-86): No. 74; four paratypes: from the same sample. Holotype and two paratypes (1175-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.





Figs 31-32. Plateremaeus elongatus sp. n. (31= dorsal view, 32= ventral view)

Remarks: The new species is well characterized by the short and not strongly erect interlamellar setae and by the ratio of the anal setae (an_1 shorter than an_2). On the basis of these, the new species stands nearest to Hoplopthiracarus inflatus Niedbala, 1984 described from Zaire. The latter is distinguished from the new species by the much longer lamellar setae, the not dilate rostral setae, the shape of the sensillus and the longer notogastral setae.

I dedicate the new species to my friend Mr. S. M. HAMID (Mombasa, Kenya).

Oribotritia tiwi sp. n.

Measurements. - Length of aspis 361-410 µm, length of notogaster: 721-976 µm, height of notogaster: 533-672 µm.

Aspis: Wide in dorsal (Fig. 29), flat in lateral view. One pair of strong lateral carinae present, connected with the lateral margins close to rostrum (Fig. 27). Rostral and interlamellar setae erect, much thicker than the filiform lamellar setae. Ratio of prodorsal setae le > in > ro. Setae ex represented only by their alveoli. Sensillus (Fig. 28) slightly fusiform, with serrate margin.

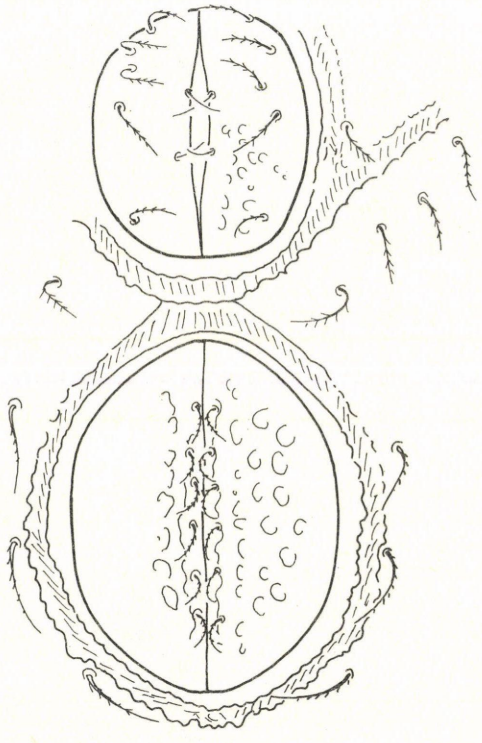


Fig. 33. Plateremaeus elongatus sp. n. (anogenital region)

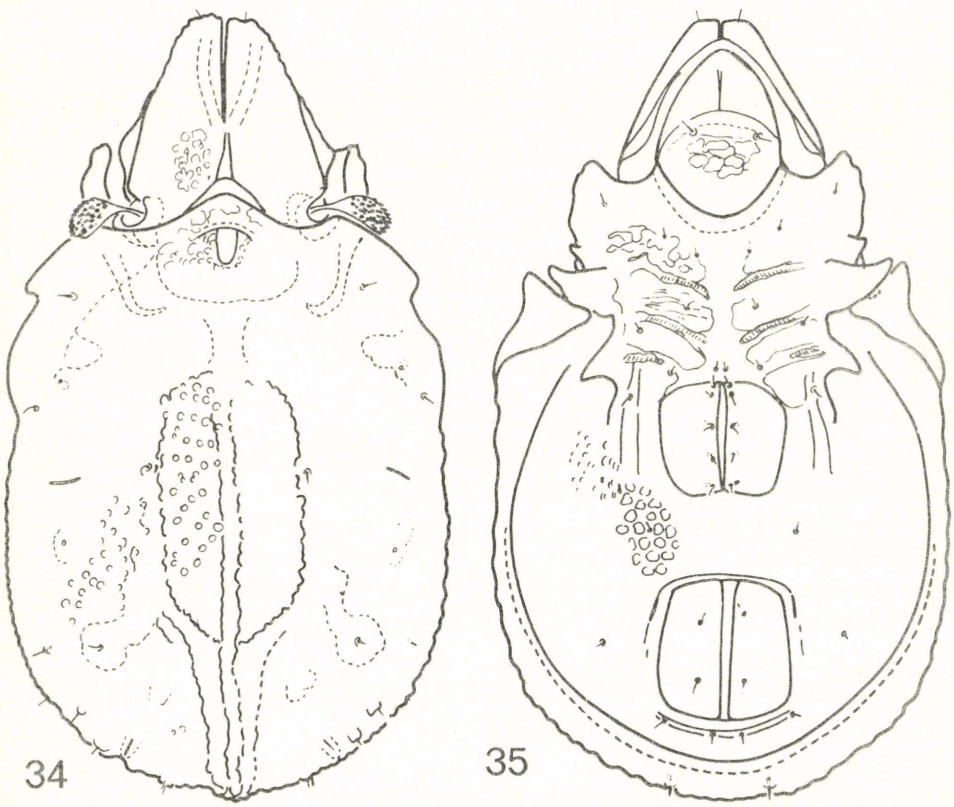
Notogaster: Two pairs (c_3, ps_3) of thin, filiform and 12 pairs of shorter but thicker, nearly spiniform, curved notogastral setae present. All setae smooth, or finely roughened. Lyrifissures very small, punctiform, hardly visible, in and ip originating very near to each other.

Anogenital region (Fig. 30): Anogenital setal formula: 9-3-1-3. Aggenital setae long, much longer than either anal or adanal ones.

Legs. All legs tridactyl. Palp 5-segmented.

Material examined: Holotype (1176-HO-86): No. 1; eight paratypes: from the same sample. Holotype and six paratypes (1176-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.

Remarks: The species of this genus were known mostly from the Palaearctic or Oriental Region. This species is the first record from East Africa. It is well characterized by the form of its sensillus and the simple, thin setae ps_3. It is distinguished from all heretofore known taxa by the strong and erect interlamellar setae.



Figs 34-35. Eremaeozetes tsavoensis sp. n. (34= dorsal view, 35= ventral view)

Plateremaeus elongatus sp. n.

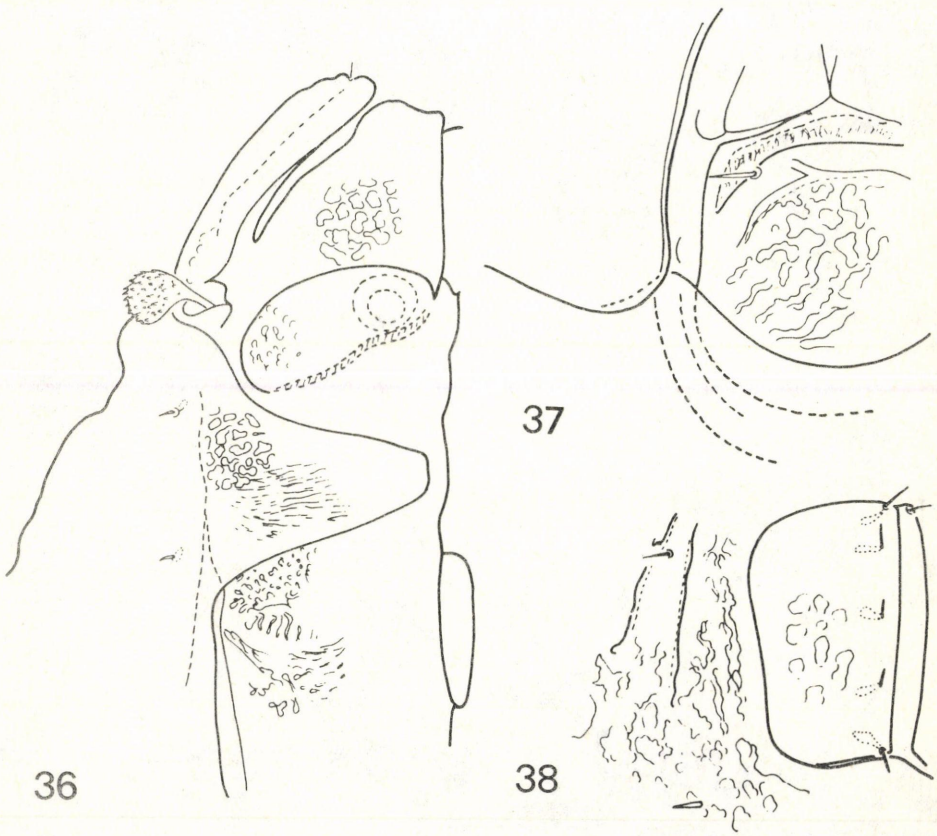
Measurements. - Length: 639-713 µm, width: 295-345 µm.

Prodorsum: Rostral and lamellar setae nearly equal in length, but rostral setae originating ventrally (Fig. 31), near to the lateral margin of camerostom, lamellar setae in rostral position. Interbothridial and interlamellar region of prodorsum alveolate, no transversal costula visible. A pair of stronger tubercles in opposite position well observable. Lateral part of prodorsum with irregular polygonate sculpture. Bothridium partly covered dorsally. Sensillus with flagellate end, its outer margin spiculate. Interlamellar setae short, spiniform.

Notogaster: A well-separated marginal costula running posteriorly, median part with larger, lateral and posterior part with smaller alveoli. Three pairs of comparatively strong notogastral setae present.

Coxisternal region (Fig. 32): Whole surface, including mentum, distinctly alveolate. Epimeral borders not observable, apodemes short, ap. sej. not longer than ap. 2. Epimeral setal formula: 7-6-7-9 (?), all setae with 5-6 long cilia.

Anogenital region (Fig. 33): Ventral plate regularly alveolate, alveoli here slightly larger than on epimeral surface. Genital and anal apertures framed, besides them a pair of

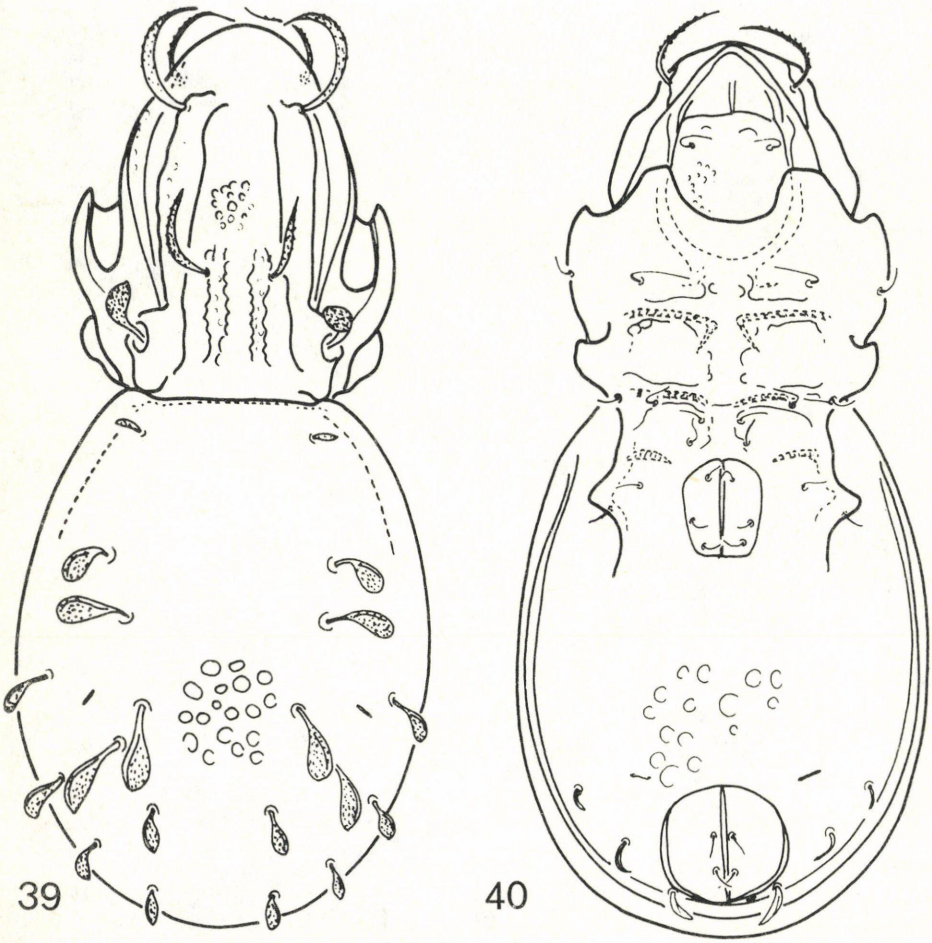


Figs 36-38. Eremaeozetes tsavoensis sp. n. (36= anterior part of body in lateral view, 37= mentum, 38= genital region)

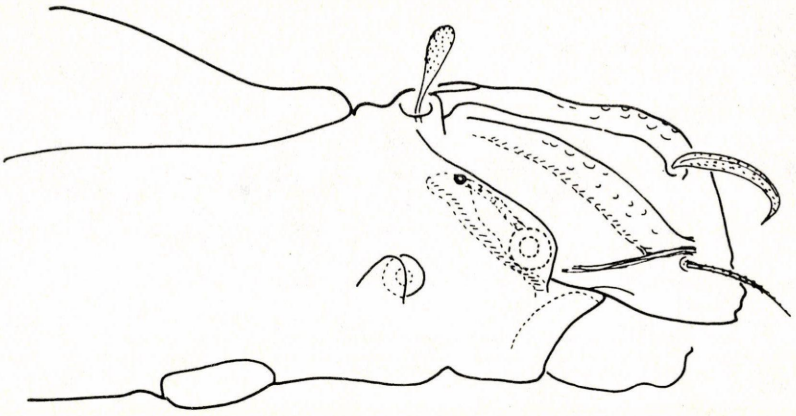
strong laths runding from the acetabulum of leg IV to the genital aperture, where they fuse with the frame of the genital aperture. Anogenital setal formula: 7-5(?)-6-3. All setae well ciliate, but the cilia of adanal setae shorter than the others.

Material examined: Holotype (1178-HO-86): No. 74; one paratypes: from the same sample (1178-PO-86). Holotype deposited in the HNHM and paratype in MHNG.

Remarks: The new species is well characterized by the peculiar chitin laths of the ventral plate. On this basis the new species stands nearest to P. glaber Balogh, 1962 (Madagascar), however, the ventral plate of the latter is not alveolated and its sensillus is dilate distally.



Figs 39-40. Papillocepheus areolatus sp. n. (39= dorsal view, 40= ventral view)



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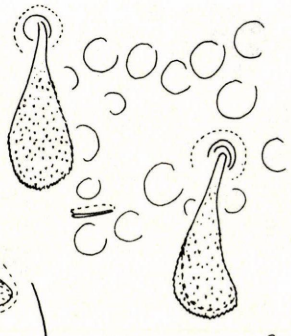

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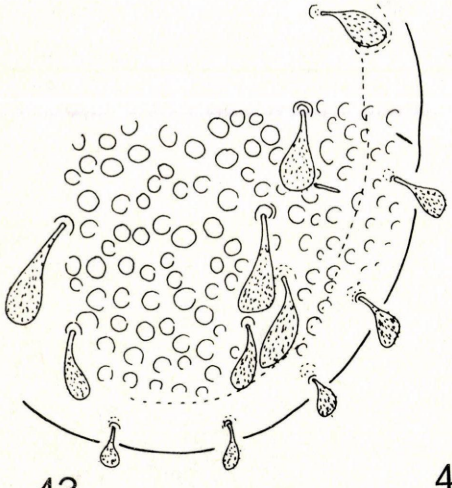

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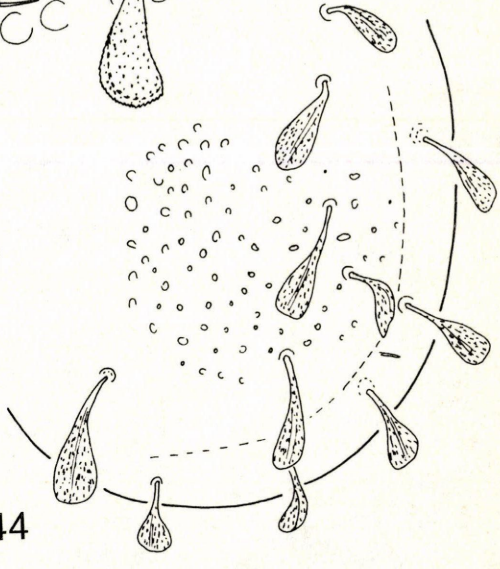


44

Figs 41-43. Papillocepheus areolatus sp. n. (41= prodorsum in lateral view, 42= sculpture of notogaster), 43= posterolateral part of notogaster

Fig. 44. Papillocepheus heterotrichus Balogh et Mahunka, 1966 (posterolateral part of notogaster)

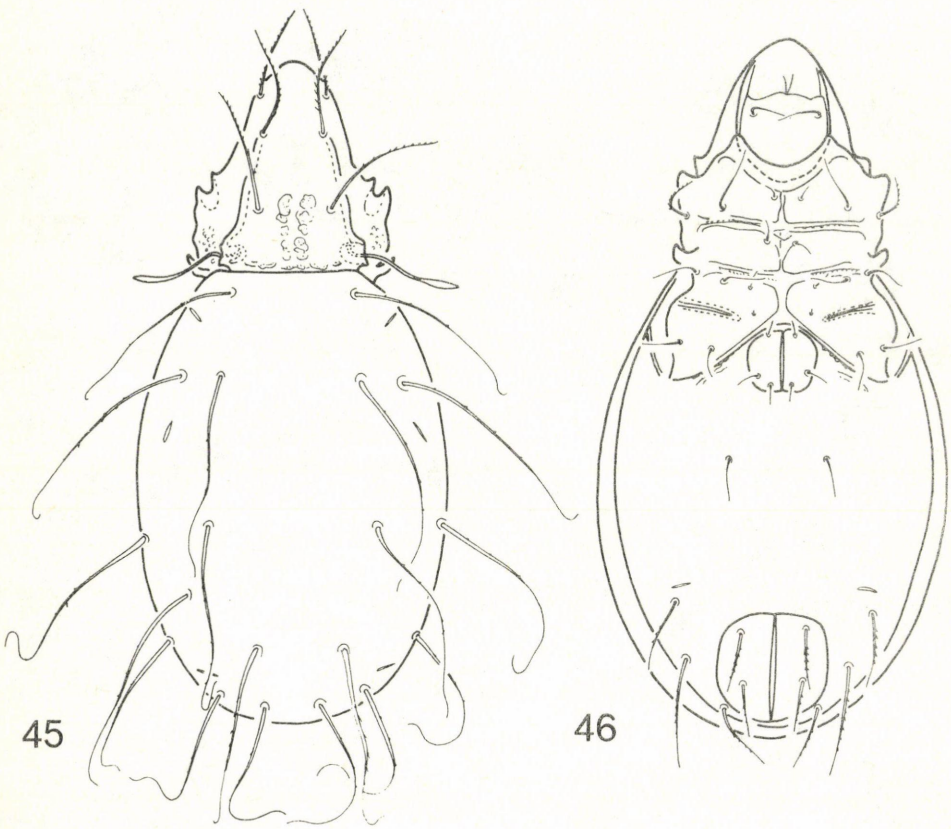
Eremaeozetes tsavoensis sp. n.

Measurements. - Length: 360-384 µm, width: 204-216 µm.

Prodorsum: Lamellae gradually narrowed anteriorly. Lamellar setae arising on the anterior margin of lamellae, without tubercles. Lamellar surface with irregular rugae and a polygonal ornamentation. Interlamellar setae not visible. Peduncle of sensillus nearly as long as its head, surface spinose.

Notogaster: Dorsosejugal suture strongly convex medially. Lenticulus originating comparatively far from dorsosejugal suture. Notogastral surface ornamented by clearly observable structure and the whole surface foveolate. The structure consists of a median crest and a median framed field, some other elevations and hollows observable (Fig. 34). Ten pairs of short, spiniform setae present. Pteromorphae tongue-shaped directed toward pedotecta 2-3. Their surface rugose, but covered by polygonal reticulation.

Gnathosoma: Mentum (Fig. 37) with a strong transversal lath anteriorly, its surface rugose.



Figs 45-46. Plenotocepheus flagellatus sp. n. (45= dorsal view, 46= ventral view)

Coxisternal region: Apodemes short but well visible, borders also observable. Epimeral surface strongly sculptured by irregular rugae or with polygonal ornamentation. Epimeral setal formula: 3-1-2-2. Pedotecta 2-3 and discidium well developed, before pedotecta a strong spur visible (Fig. 35).

Anogenital region: Ventral plate ornamented by different ornamentation: laterally pustulate or rugose, medially alveolate, basally foveolate. Genital plates (Fig. 38) with indistinct, anal plates with stronger ornamentation. Anogenital setal formula: 5-1-2-3. All setae spiniform.

Material examined: Holotype (1179-HO-86): No. 74. Seven paratypes: from the same sample. Holotype and five paratypes (1179-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.

Remarks: The new species belongs to the "lineatus-group", and it stands nearest to E. machadoi Mahunka, 1987. It is characterized by the median crest and fields but it has only five genital setae, but all species of its relation have six. The new species is distinguished from the others also by the lack of lamellar tubercles, the distance of the lenticulus from the anterior notogastral margin, etc.

Papillocepheus areolatus sp. n.

Measurements. - Length: 549-590 µm, width: 246-279 µm.

Prodorsum: Rostrum widely rounded. Lamellae broad, without sharp cuspis (Fig. 39), truncate. Tutorium also well developed, long, a well-observable lateral lamelliform expansion also present (Fig. 41). Rostral setae setiform, originating on spa. 1. Lamellar and interlamellar setae phylliform, exobothridial setae reduced. All three pairs of prodorsal setae distinctly barbed. Sensillus clavate, its surface also barbed. In the basal part of the interlamellar region one pair of strong, longitudinal costula present. A short podocephalic canal observable. One pair of prodorsal condyles (co. pl.) strong, between them some smaller tubercles visible.

Notogaster: Dorsosejugal region without condyles, anterior part of notogaster excavated. Surface distinctly areolate, areolae mostly larger than distance among them. All setae dilate, nearly spathulate (Fig. 43), setae ta and postero-marginal ones much smaller than the others.

Gnathosoma: Anterior part of mentum strongly chitinized, with a pair of crescentiform crests. Setae h directed inwards.

Coxisternal region: Epimeral setal formula: 2-0-3-3. Setae 1a and 2a reduced, setae 3c and 4c originating on the postero-marginal part of pedotecta 2-3 and on discidium respectively, sometimes hardly visible. Epimeral surface weakly foveolate, but median part smooth.

Anogenital region (Fig. 40): Genital plates much darker than the other ventral region, their surface rugose. Anogenital setal formula: 3-0-2-3. Lyrifissures iad originating setae from the anal aperture. All three pairs of adanal setae phylliform.

Legs: All tarsi without spiniform setae.

Material examined: Holotype: (1184-HO-86): No. 74; two paratypes: from the same sample; two paratypes: No. 11. Holotype and two paratypes (1184-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.

Remarks: The new species is well distinguished from the type species of the genus (P. heterotrichus Balogh et Mahunka, 1966) by the sculpture of the notogaster and the ratio of the notogastral setae (Fig. 44).

Plenotocepheus flagellatus sp. n.

Measurements. - Length: 557-747 µm, width: 262-353 µm.

Prodorsum: Lamellae narrow, directed anteriorly slightly inwards, lamellar setae arising on them. Ratio of prodorsal setae: in > le > ro; all thin, setiform, finely ciliate. Sensillus (Fig. 48) long, directed outwards, with lanceolate head. Its surface smooth. Interlamellar region without characteristic ornamentation, in the median line some weak spots visible. Basal condyles absent, but some short crests observable. Lateral condyles also absent. Lateral part of prodorsum (Fig. 47) granulate.

Notogaster: Dorsosejugal region without condyles or other structure. Notogastral surface smooth, some very weak foveolae on posterior part sometimes observable. Ten pairs of long, thin, flagellate notogastral setae present (Fig. 45). Setae ps_1 and ps_2 stand much near-

Figs 47-49. Plenotocepheus flagellatus sp.n. (47= prodorsum in lateral view, 48= lateral part of prodorsum in dorsal view, 49= notogaster in lateral view)

er to each other than ps_2 and ps_3. Between lyrifissures ip and ih setae h_3 originating, while between ip and ips setae r_3 (Fig. 49).

Coxisternal region: Surface without ornamentation. Epimeral borders well visible, bo.4 with some teeth posteriorly. With the exception of median setae, all epimeral setae long, 1c distinctly barbed.

Anogenital region (Fig. 46): Genital plate dark. Anogenital setal formula: 3-1-2-3. Aggenital and adanal setae very long, ad_2 much longer than ad_3 or ad_1. Lyrifissures originating far anteriorly from anal aperture, in front of setae ad_3.

Material examined: Holotype: (1185-HO-86): No. 1; three paratypes: from the same sample. Holotype and one paratype (1185-PO-86) deposited in the HNHM, one paratype in MHNG and one paratype in NHMN.

Remarks: The new species is distinguished from all heretofore known species of Plenocepheus Hammer, 1966 by the long and flagellate notogastral setae and by the ratio of the adanal setae. ($ad_2 > ad_1$).

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